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Development of a Management Option for Contaminated Sediment in Thunder Bay North Harbour

February 2019



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Purpose of Meeting

- Provide an update on the activities of a Working Group that has been established to develop and recommend a preferred option for the management of contaminated sediments in Thunder Bay North Harbour (TBNH)



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What agencies are involved?

- Environment and Climate Change Canada (ECCC) and Transport Canada (TC) are co-chairing the working group.
- Transport Canada owns the majority of the affected waterlot.
- Thunder Bay Port Authority has administration and control of the waterlot under the Canada Marine Act
- Environment and Climate Change Canada and the Ontario Ministry of the Environment, Conservation and Parks coordinate Canada's and Ontario's implementation of binational and domestic commitments to restore and protect the Great Lakes.
 - The Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health (COA) sets goals to address contaminated sediment in the North Harbour as part of the effort to restore the Thunder Bay Area of Concern.



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Site Overview

- Contaminants of Concern: Total Organic Carbon, Mercury, Resin Acids, Copper
- Volume: approximately 390,000 cubic meters (which could fill over 150 Olympic-size swimming pools)
- Area: approximately 26 hectares covered with enriched organic sediment (approx. 31.5 football fields)
- Up to 4 metres of greyish, digested pulp deposits
- Sediment consists mainly of digested pulp, silt and clay
- Entrapped gas





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Enriched Organic Sediment (EOS)





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Timeline of Major Activities

Pre-2007	2007-2008	2009-2011	2012-2013	2014-2015	2018
ECCC/MECP undertook chemical and biological studies	2007: Sediment Management Strategy: Management options Screening 2008: Steering Committee Formed	SMO Assessment	Peer Review of SMO Assessment Risk Assessment Geotechnical Study	Updated SMO Assessment Short listed options: <ul style="list-style-type: none">• Disposal in an off-site CDF• Disposal in a new on-site CDF	A Working Group was formed in fall 2018. Additional SMO Assessment: <ul style="list-style-type: none">• In-place barrier• Use on-site lagoon as a disposal site

ECCC = Environment and Climate Change Canada

MECP = Ontario Ministry of the Environment, Conservation and Parks

SMO = sediment management option

CDF = confined disposal facility

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The Need for Sediment Management Action



Risk Assessment Results

- An Ecological and Human Health Risk assessment identified unacceptable risks:
 - Potential risk to kingfishers from mercury;
 - Potential risk to sediment dwelling organisms from total resin acids;
 - Potential risk to people consuming fish caught from the TBNH (fish consumption advisory in place to mitigate this risk (<https://www.ontario.ca/page/eating-ontario-fish-2017-18>)); and
 - Potential risk to people coming in direct contact with contaminated sediment (industrial/construction workers/recreational users/subsistence fishers).
- TBNH is considered a Class 1 – high priority for action under the Federal Contaminated Sites Program Aquatic Sites Classification System



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Mill/Site Ownership

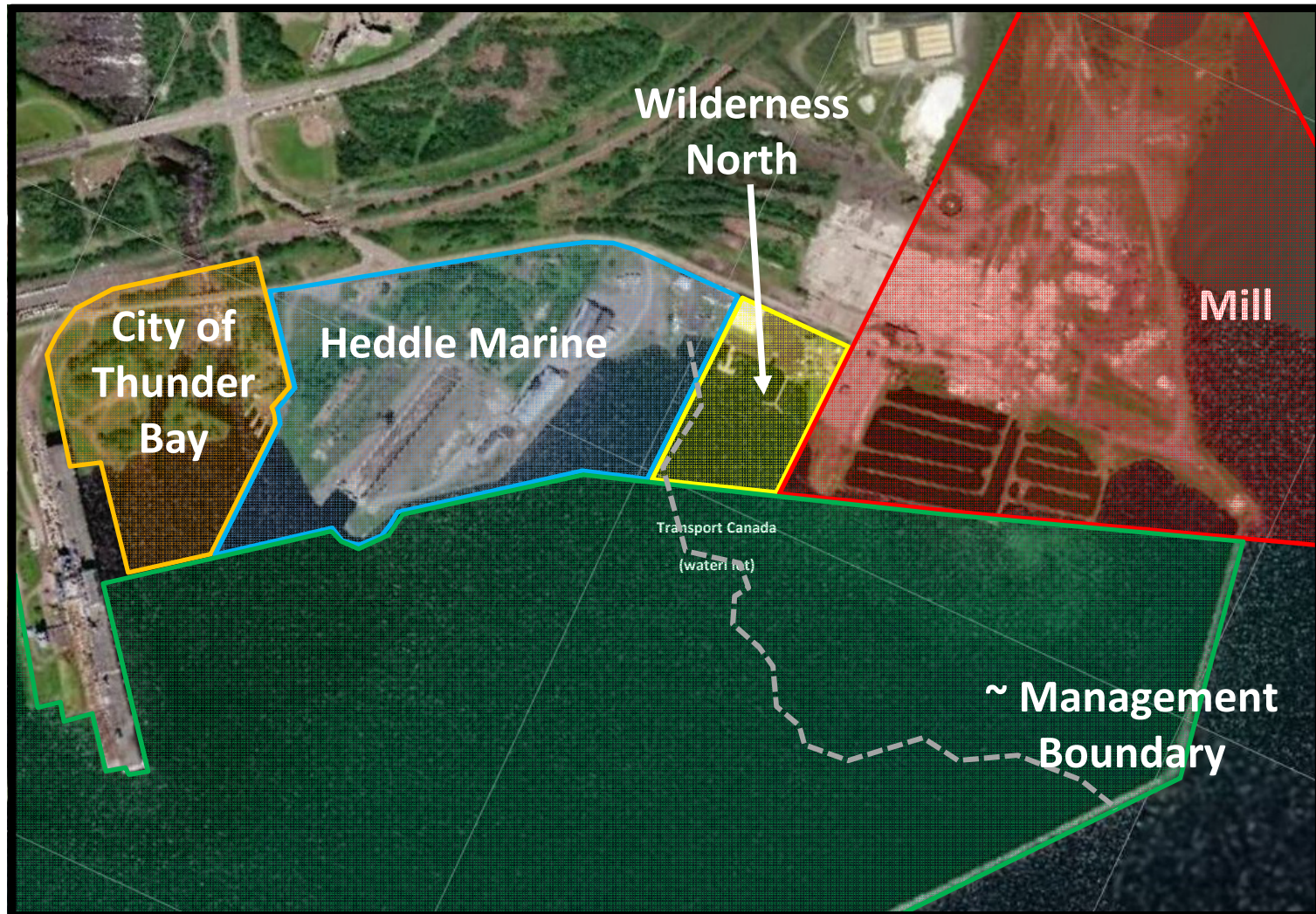
Owner	Term	Comments
Abitibi Consolidated Inc.	1918-1993	Bankrupt as of 2009
Employees Group	1993-1997	
Cascades Fine Paper Group Inc.	1997-2007	
Thunder Bay Fine Papers	2007-2009	Operated the mill for 4 months; the mill closed in 2007.
Superior Fine Papers (SFP)	2009-2018	Mill site decommissioned
	current	Wilderness North has a purchase agreement for SFP shares



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Property Ownership (approx. boundaries)





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Sediment Management Options Assessment



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Results of Evaluation

(Cole 2015 Final Report) – first 3 ranked options will be further evaluated.

Rank	SMO	Score
1	4A. Dredge and New On-Site CDF Disposal	0.686
2	4B. Dredge and Use Existing Lagoons as CDF Disposal	0.660
3	5. Dredge and Off-Site CDF Disposal (Mission Bay)	0.655
4	3. Dredge and Upland Disposal	0.571
5	2. Excavate and Upland Disposal	0.569
6	8 Dredge, Cap and On-Site CDF Disposal	0.566
7	1. Capping	0.535
8	7. Dredge, Cap and Off-Site CDF Disposal	0.531
9	6. Dredge, Cap and Upland Disposal	0.418



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TBNH Working Group



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TBNH Working Group

- **Objective:** recommend a preferred option for the management of contaminated sediments in Thunder Bay North Harbour.
- **Scope of Work:** consider all previous and new information on management options, represent each organization's interests in the deliberations, and consider community input in recommending a preferred sediment management option.
- **Membership:**
 - Transport Canada (Co-Chair)
 - Environment and Climate Change Canada (Co-Chair)
 - Ontario Ministry of the Environment Conservation and Parks
 - Thunder Bay Port Authority
 - City of Thunder Bay, Infrastructure & Operations
 - Métis Nation of Ontario
 - Red Sky Métis Independent Nation
 - Fort William First Nation
 - Cascades Fine Papers Group
 - Richardson's International
 - Wilderness North
 - Heddle Marine
 - Public Advisory Committee (PAC) to the Thunder Bay Remedial Action Plan



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Working Group –Community Engagement Strategy

- **Public Meeting(s)** - Information session(s) will be held to present an overview of the SMO assessment.
- **Project Engagement** - The Crown Agencies have and will continue to outreach and engage Indigenous groups, local stakeholders and the public.
- **Website**– Project information, technical reports and background information are available on the InfoSuperior website:
<http://rap.infosuperior.com/northharbour/>



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Further Evaluation of Previously Short Listed and New SMOs



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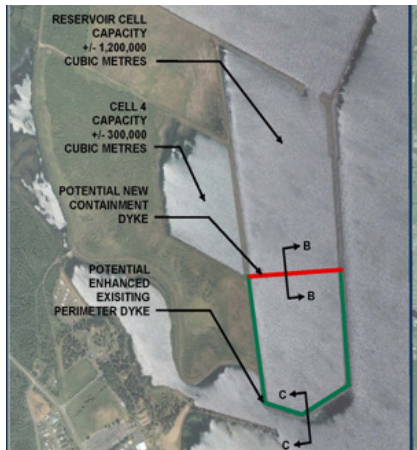
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SMOs Under Consideration

SMO	Previously Considered/New
4. Dredge and On-Site CDF Disposal	
4A. Dredge and New On-Site CDF Disposal	Previously Considered
4B. Dredge and Use Existing Lagoons as CDF Disposal	Previously Considered
4C. Modify / Expand Lagoons	New
5. Dredge and Off-Site CDF Disposal (Mission Bay)	Previously Considered
9. Berm with Fill	New



Sediment Management Options

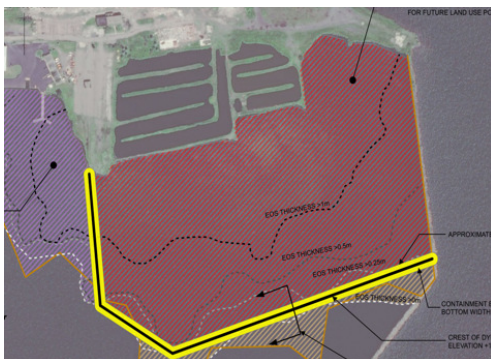
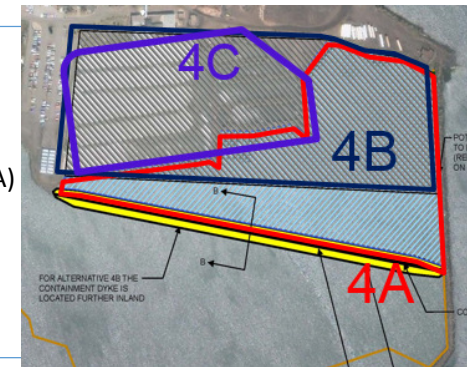


Dredging and disposal at the Mission Bay CDF owned by the Port Authority (Option 5)

- Enhancements to the existing CDF may be required to contain contaminants in the EOS.
- After several years of consolidation, the EOS would be capped.

Dredging and disposal at an on-site CDF/lagoon (Option 4)

- 4A. Build a new On-Site CDF (Red) – does not use the former mill's effluent lagoon
- 4B. Use Existing Lagoons as the CDF (Black) with some in-water portion (but less than 4A)
- 4C. Modify/Expand the former mill's lagoon (Blue) to contain all the dredged contaminated sediment
- For 4A, 4B and 4C, after several years of consolidation, the EOS would be capped.



In-Place Barrier (Option 9)

- Build a berm around the impacted sediment. Excavate the minimal amount of contaminated material outside the berm and place it inside.
- Clean fill placed over the contained EOS material within the berm.
- Potential to cap after allowing several years of consolidation.






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Previously Short-Listed SMO – On-site CDF without lagoon (4A)



-  ALTERNATIVE 4A DYKE
-  ALTERNATIVE 4A FILLED AREA
-  DREDGE LIMITS





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Previously Short-Listed SMO – On-site CDF with lagoon (4B)



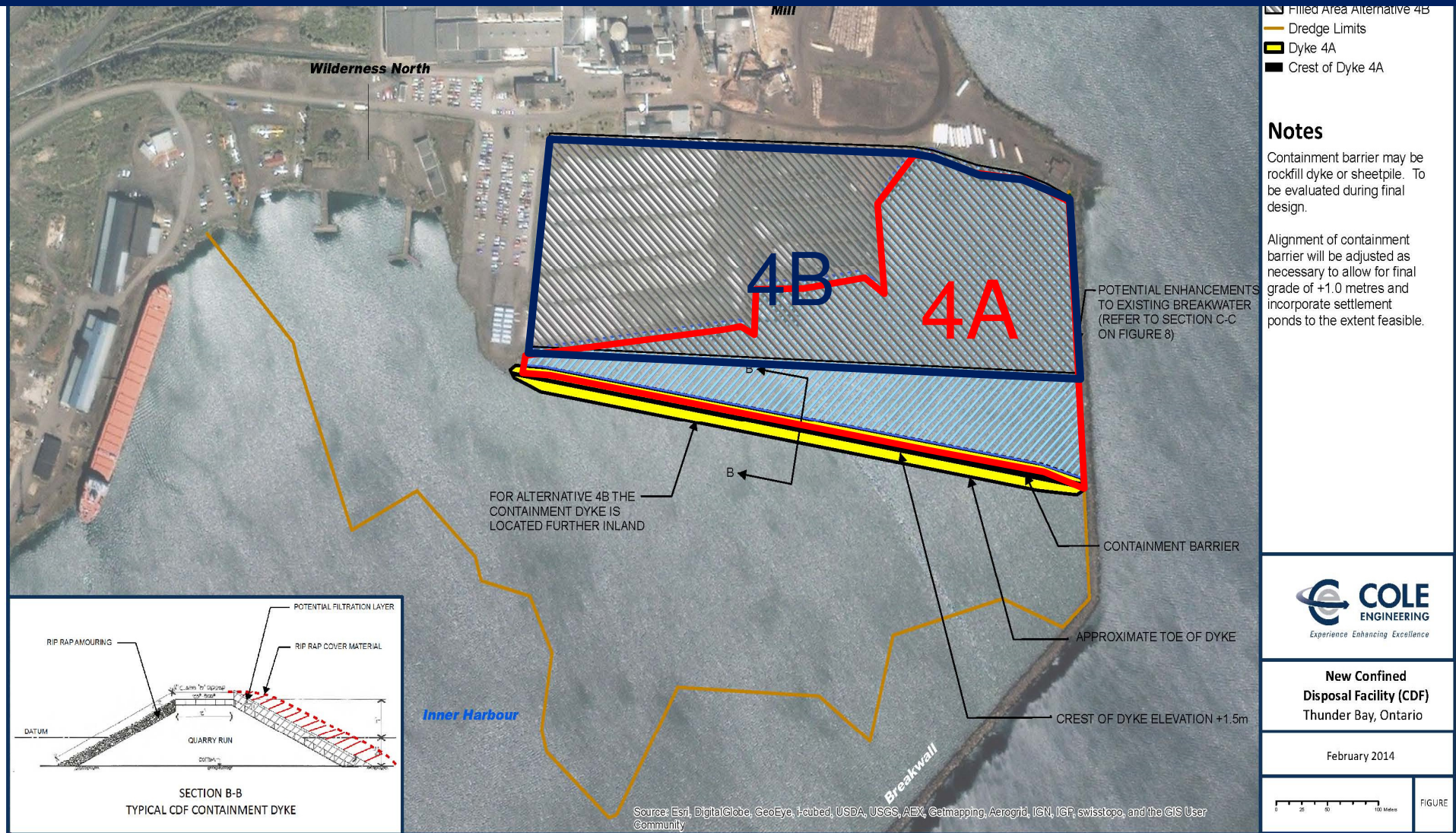
ALTERNATIVE 4B FILLED AREA

ALTERNATIVE 4B DYKE

--- DREDGE LIMITS

100 0 100 200 300 400 m

Previously Short-Listed SMOs – On-site CDF Options (4A and 4B)





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New SMO Consideration - Modify/Expand Lagoon (Option 4C)

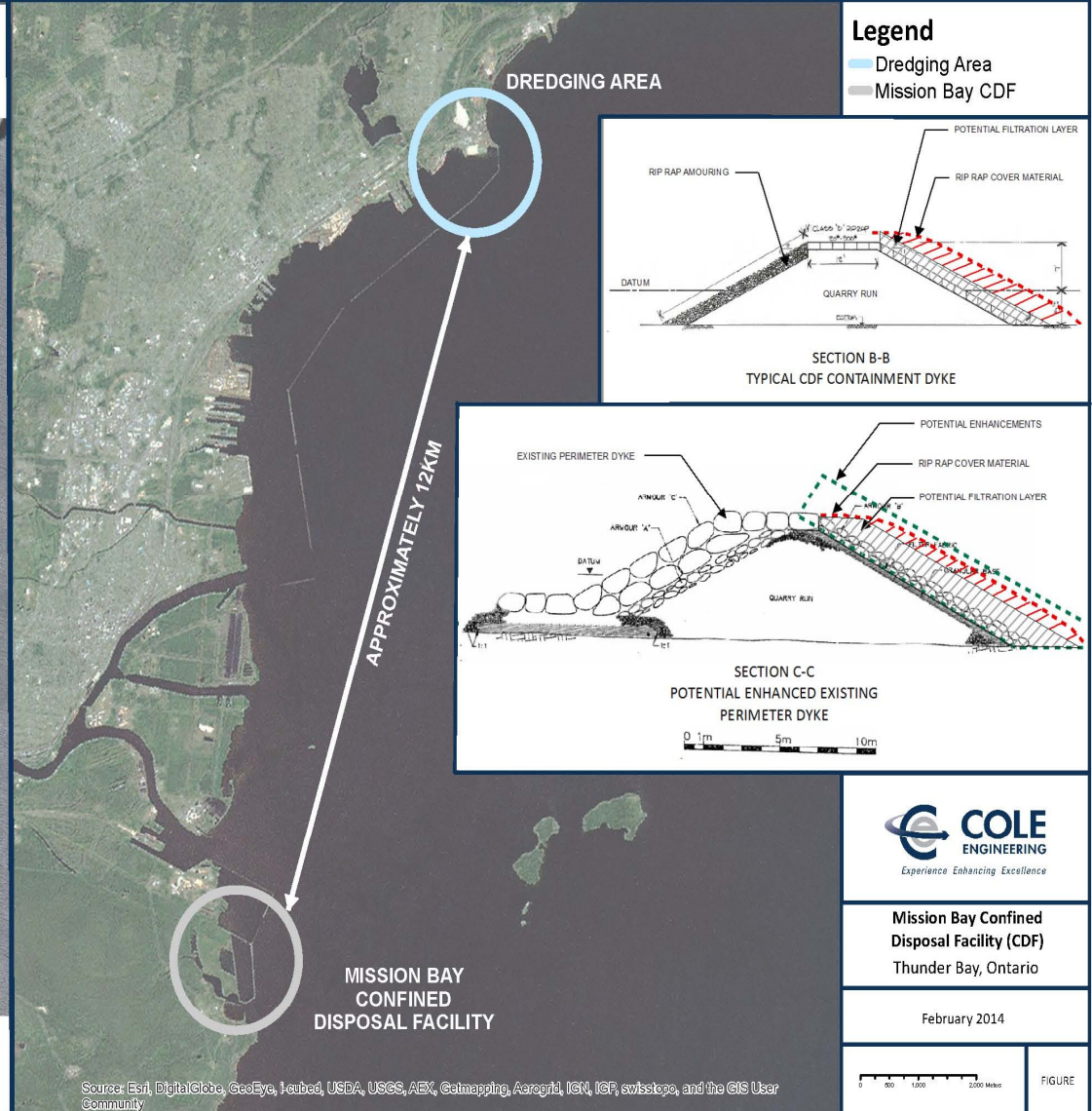
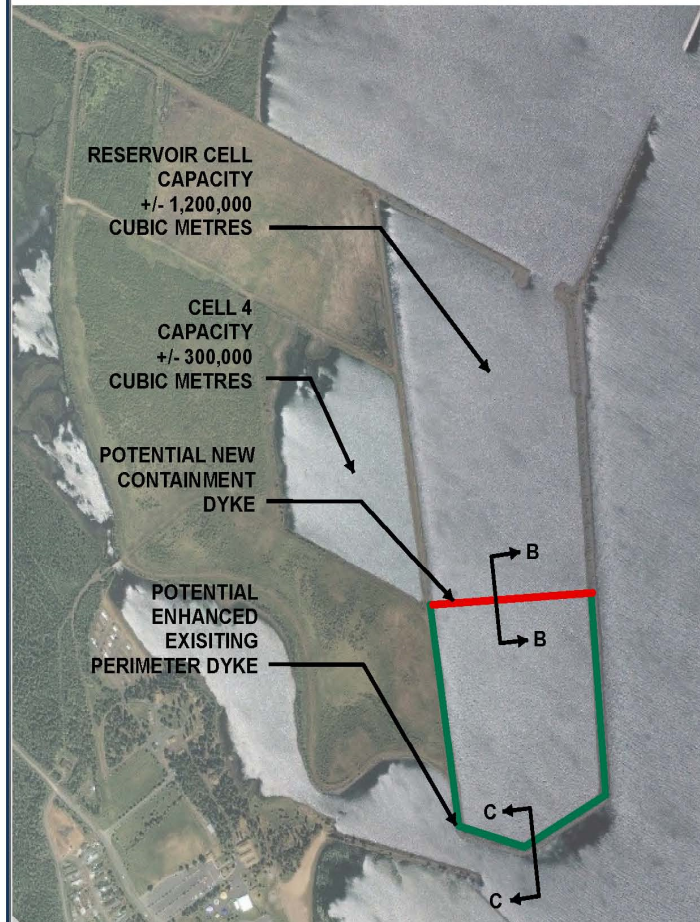


2018 Google Map

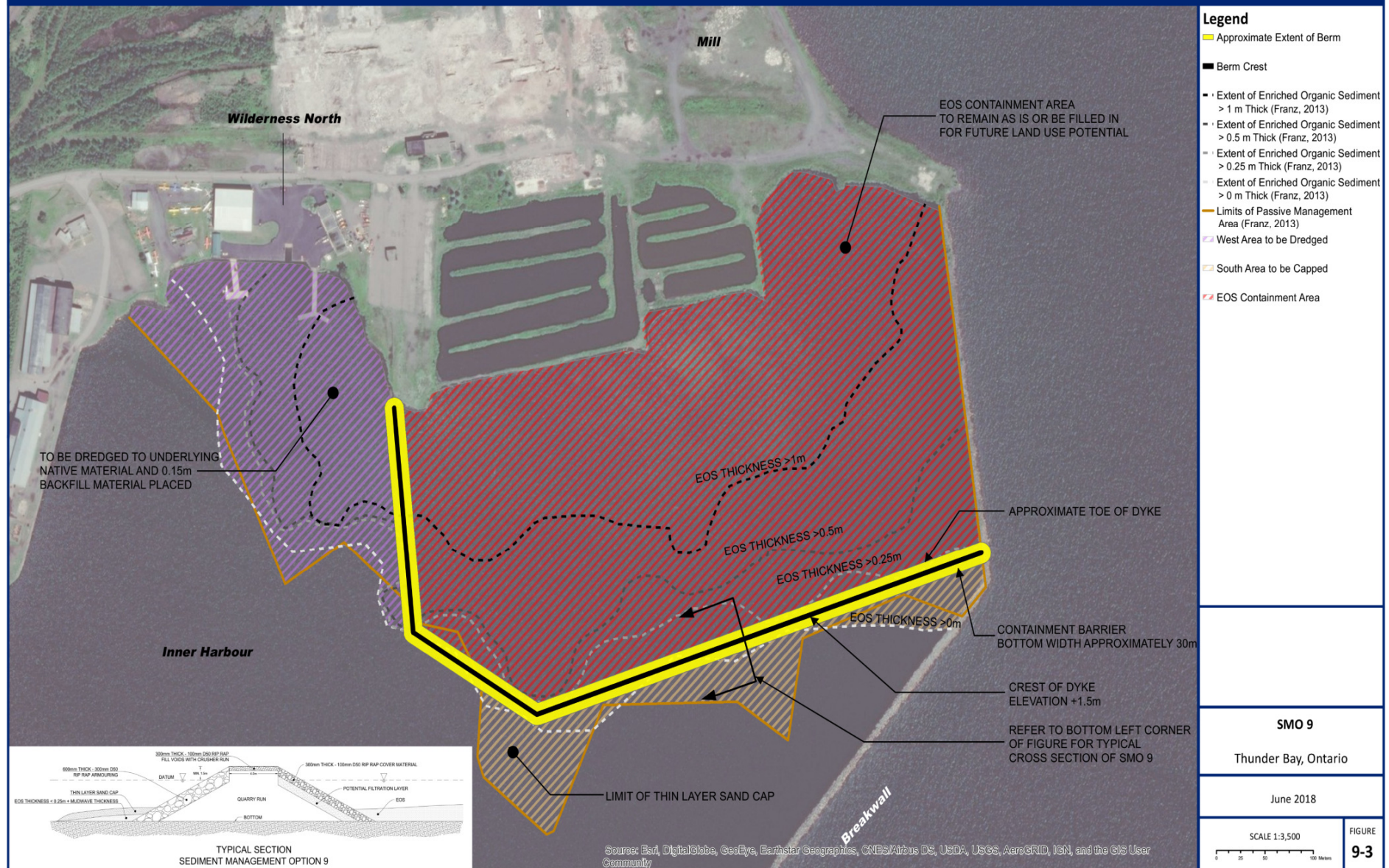
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Previously Short-Listed SMO – Disposal at the Mission Bay CDF (Option 5)

Mission Bay Confined Disposal Facility



New SMO Consideration – Berm with Fill (Option 9)





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Current Work - Technical Studies

ECCC and TC have contracted environmental consultants to undertake technical studies:

Resilient activities to be completed March 31st 2019

Assess technical feasibility of option
9

Assess technical feasibility of option
4C (Modify/Increase the Capacity of
Lagoons)

Update Cost estimate for 5 short-
listed options (from 2014 dollars to
present-day costs)

CDF Design Life Assessment

Golder activities to be completed March 31st 2019

SMO Option 4 C - Conduct a
bathymetry/ground penetrating radar
(GPR) survey of existing lagoons.

Undertake a peer review of a previously
conducted Site-Specific Risk Assessment.

SMO Option 9 - Evaluate risk reduction
achieved by a containment berm without
the addition of clean fill material.

Review incineration as a potential
Sediment Management Option





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Next Steps



Next Steps

	Winter 2019	Spring 2019	Summer 2019	Fall 2019	Winter 2020	Spring 2020
Technical Studies						
Engagement Meetings						
Site Ownership						

Note: Once this process is completed, the Working Group will recommend a sediment management option to the senior management of:

- Transport Canada
- Thunder Bay Port Authority
- Environment and Climate Change Canada
- Ontario Ministry of the Environment Conservation and Parks



Next Steps - Technical Studies

Completion of SMO evaluation process in 2019/20:

- Evaluate potential work activities for 2019/20 based on Resilient and Golder's 2018/19 findings.
- Potential work to assess SMO Option 5 (Mission Bay CDF) may be required
- Resilient to update the scoring of short-listed options prior to and after public and Indigenous Engagement (last scoring parameter)



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Next Steps - Engagement Meetings

- On-going engagement with Fort William First Nation, Red Sky Métis Independent Nation, and Métis Nation of Ontario:
 - Crown agencies continue to work with Indigenous communities to determine appropriate engagement.
 - Information sessions may be held in Spring 2019 and in Winter 2020 to present short listed sediment management options, depending on community requests.
- Information sessions for the General Public:
 - Scheduled for Winter 2019 and planned for Winter 2020 to present short-listed sediment management options.



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Next Steps - Working Group

- Continued bi-monthly meetings (teleconference and in-person)
- Provide support to project consultants, where appropriate, in determining the feasibility of short-listed options
- Provide input on key findings and recommendations for additional work from consultant's 2018/19 findings
- Provide on-going review of updates short-listed options
- Updates to individual Working Group organizations will be provided, as requested



Next Steps - Site Ownership

- Discussions on potential owners for onsite Containment Options (4A, 4B, 4C and 9)
- Short List Option selection between 4A, 4B or 4C
- Develop agreement in principle with potential long-term owner on:
 - On Site CDF ownership
 - Outstanding provincial obligations (ex. Environmental Review Tribunal (ERT) conditions)
 - Future site use
 - Monitoring & maintenance
 - Other requirements



Conclusion of Working Group

- The Working Group's recommendation on a preferred sediment management option will be articulated in the form of a report that will be submitted to the key federal and provincial government agencies. Following report finalization, the working group will be disbanded and next steps will be determined.
- The working group will remain in place until a preferred sediment management recommendation is made.



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Resources

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- Background reports and additional information are available, and will continue to be posted, on the InfoSuperior website:

<http://rap.infosuperior.com/northharbour/>

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